

UV curing for bonding syringes

Increased production rates and consistent quality

A California based medical device manufacturer dedicated to healthcare worker safety solutions needed an automated assembly process for their new product, a syringe with a needle retraction design.



When the plunger is fully depressed, the needle automatically retracts into the syringe where it remains for transport and disposal, protecting healthcare workers from needlestick injuries. To get the required production rates, they turned to UV curing. The competing technology for this application is a two-part epoxy, which takes minutes instead of seconds to cure.

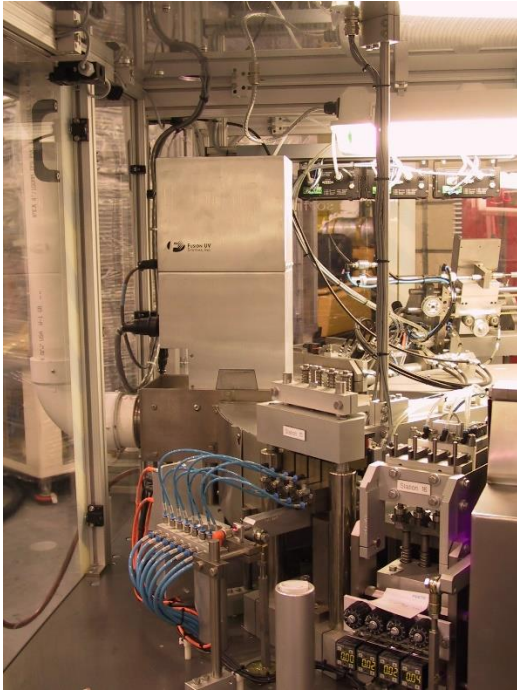
Initially the company used a low volume (24 per minute) system for one year while they refined the assembly process and proved the product in the marketplace. Seeing high marketplace acceptance, they purchased a new, fully automated assembly line that incorporated Heraeus Noblelight 6-inch microwave-powered UV curing systems with a D bulb to cure the adhesive that bonds the stainless

needle to the plastic cannula.

The overall production system has several pods each creating subassemblies, which are then fed into a final assembly pod, and finally each completely assembled safety syringe is packaged. The assembly line can produce 120 syringes per minute.

The subassembly pod has a rotary indexing dial, which indexes every 2 seconds. A feeder loads four plastic cannulas onto a holder and a subsequent feeder loads a stainless needle into each cannula. An automatic dispensing machine places a precisely metered amount of adhesive onto each part and then they travel underneath the UV curing lamp. Over 5 station indexes, or a total of ten seconds, the parts are exposed to the UV for sufficient curing.

Built-in quality and inspection systems assure each part meets the high quality required for medical products. Occasionally the needle/cannula assembly machine may stop due to a problem in another pod. A touch screen interface enables the operator to immediately see where the problem is. When the machine stops the UV curing lamp goes to standby mode, ensuring that the plastic parts beneath don't melt while the operator corrects the problem and restarts the machine. When the machine starts back up, the UV curing lamp's quick restart feature means it's back to full power immediately.



Benefits

- Increased production rates
- Reduced waste and no environmental emissions
- Improved product consistency and quality

Technical Data

- 6-inch microwave-powered UV curing system with quick restart feature & D bulb
- UV-curable adhesive cures in 10 seconds
- 120 syringes/minute

www.heraeus-noblelight.com

Germany
Heraeus Noblelight GmbH
Heraeusstraße 12-14
63450 Hanau
Phone +49 6181 35 4499
Fax +49 6181 35 164499
hng-uv@heraeus.com

USA
Heraeus Noblelight America LLC
910 Clopper Road
Gaithersburg, MD 20878
Phone +1 301 527 2660
Fax +1 301 527 2661
info.hna.uvp@heraeus.com